Challenges and Opportunities for Precision and Personalized Nutrition: Days 1 and 2

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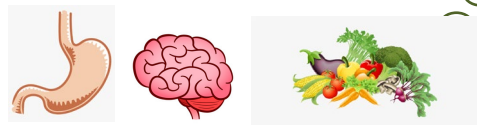
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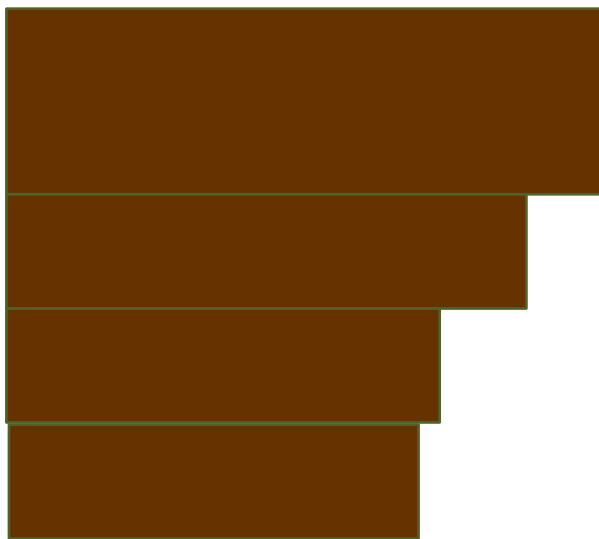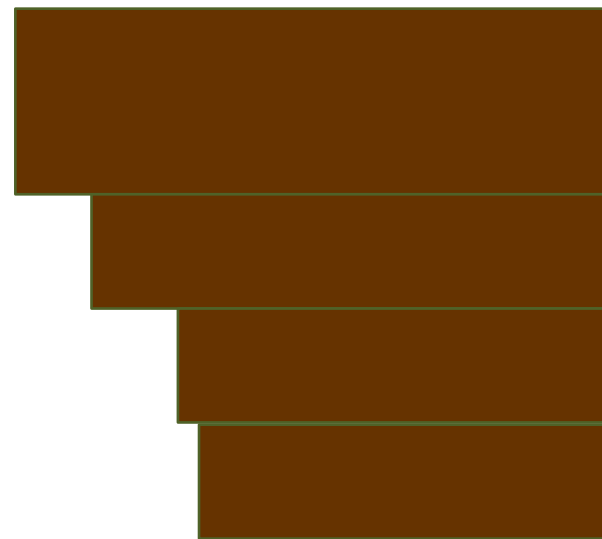*Twitter: @PHICORteam | @bruce_y_lee*

Bridging the Chasm

Day 1

Some day we'll be together

Day 2

Nutrition

Technology

Day 3

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Moving Towards the Specifics

Day 1
Specific Issues in Precision Nutrition

Day 2
Specific Examples of New Data science/ Computer/Tech approaches

Day 3
Specific Issues in Implementation and Translation

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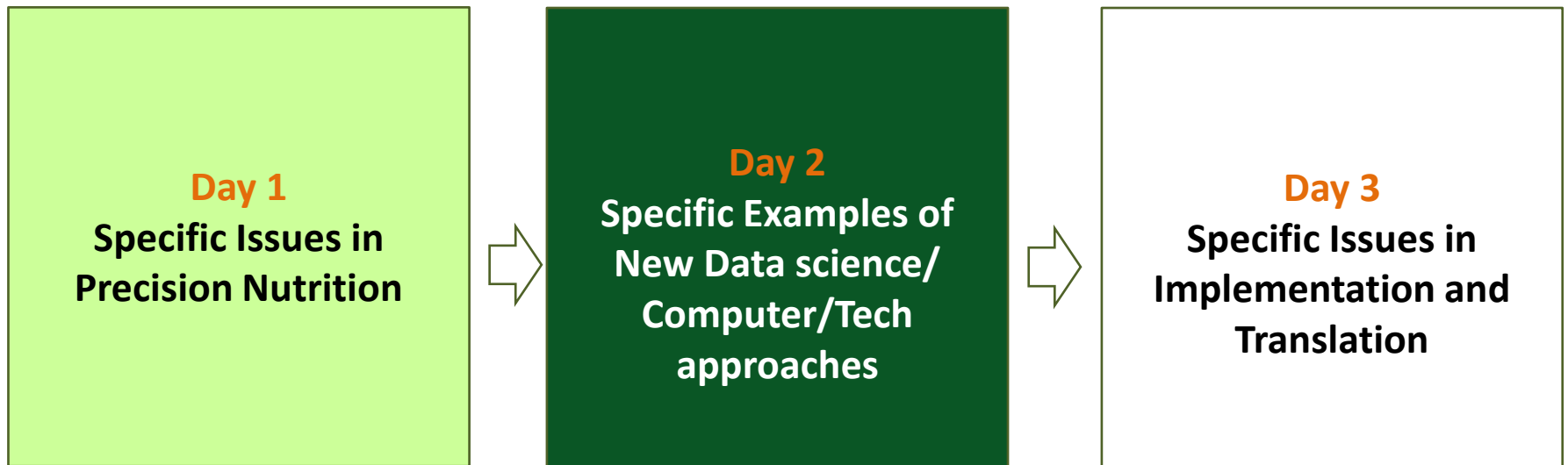
What's the Landscape?

Mariette Abrahams, Qina:

- **Origins:** Limited evidence, niche market with a few high tech players, early adopters female, educated with disposable income, behavior change was sidenote
- Covid-19 pandemic has driven demand for telehealth, smart eating apps, etc,
- **New Trends:** Microbiome, cardiometabolic health, hybrid approaches, sustainability, regulation
- New entrants such as consumer health, retailers

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Genetics Scale

- **Denise Ney, University of Wisconsin-Madison:** Newborn screening for inborn errors of metabolism (IEM) with whole exome sequencing (WES)

- **Jim Kaput, Vydiant:** Stratifying people by their polygenic risk score and then determined how different characteristics (e.g., socio-demographics, BMI, meat and milk intake, and nutrient levels) are distributed across the terciles.

- **Ahmed El-Sohemy, University of Toronto & Nutrigenomix:** Giving people the right genetic information couples with actionable items does in fact motivate people to change behaviors

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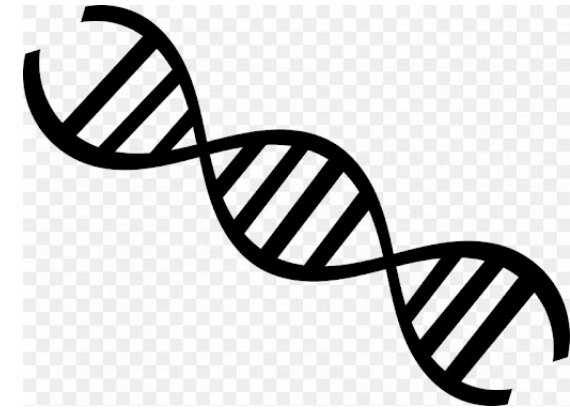
Biological/Physiologic Scale

- **Sarah Berry, King's College London:** Creating dashboard that predicts individual's postprandial response to food and at home tests to help deliver personalized dietary advice

- **Michal Rein, Weizmann Institute of Science:** Evaluating the clinical impact of Personalized Postprandial Targeting (PPT) Diet in populations with imbalanced glucose tolerance

- **Guru Banavar, Viome:** Analyzing gut microbiome activity, categorize foods, and then recommending specific food to specific individuals

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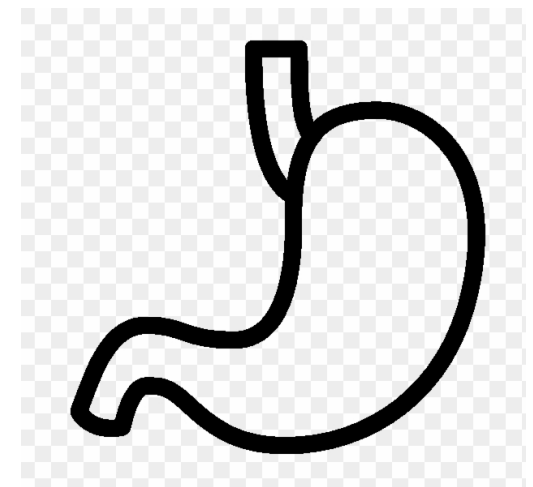
Individual Scale

- **Andres Acosta, Mayo Clinic:** Using machine learning to identify four obesity phenotypes- hungry brain, hunger gut, emotional hunger, and slow burn

- **Samantha Kleinberg, Stevens Institute of Technology:** Employing sensor technology to show what people are eating and when

- **Diana M. Thomas, United States Military Academy at West Point:** Utilizing natural language processing (NLP) to help understand what people are thinking

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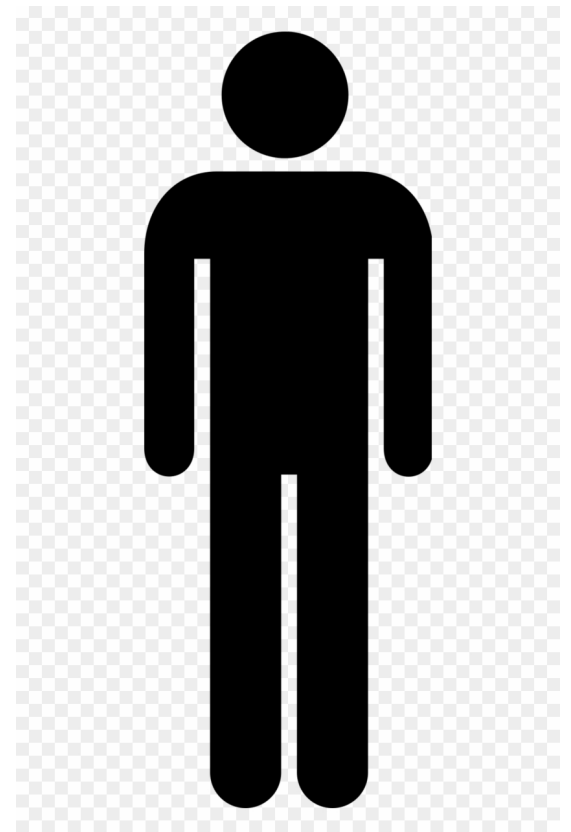
Socio-Ecologic Scale

- Kayla de la Haye, University of Southern California: Using social network analysis to better understand people's relationships which can influence diet

- Sean Duffy, Omada Health: Combining data collection devices and analytics to then provide more tailored recommendations

- Michael Howell, Google Health: Conducting extensive mapping and geospatial analysis to better understand neighborhoods and their characteristics

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Need to think about a Systems Approach

- Tech alone is not going to be the solution but can help untangle complex relationships, systems
- Risk of bias, lack of inclusion/diversity
- Key will be how to interlace complex issues related to nutrition across different scales and how can technology enable that
- Need lots of diverse data and sharing
- Still early days, scratching the surface
- Transparency of methods and data important
- Specifics, specifics, specifics

SYSTEMS!
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And now on to Day 3...

Thank you!

And

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